REMARKS

Claims 1-12, as amended, are pending herein.

The indication of allowable subject matter in claims 3-5 and 8-10 is acknowledged.

The remaining claims have been rejected under §102(e) as anticipated by the Howard U.S. patent No. 6,683,884. Reconsideration of this rejection is courteously requested.

Claims 1 and 4-9 have been amended for clarity by removing the variables C(j), A(j), and L and substituting therefor the language to which the variables relate. Similar amendments have been made to corresponding foreign applications.

Claim 1 relates to a method for servicing output queues which selects an output queue having an associated credit counter holding a lowest credit value. Claims 11 and 12, respectively relate to a scheduler and a data switching node implementing a method for servicing output queues which selects an output queue having an associated credit counter holding a lowest credit value.

While the present application and Howard address queue service scheduling methods, the queue service scheduling problem addressed by Howard is different from the queue service scheduling problem addressed in the present application.

Howard builds on Round Robin queue service scheduling techniques, and particularly on Deficit Round Robin (DRR) techniques (see column 1, line 24). The outcome which Howard finds inadequate, as pointed out at column 2 lines 14 to 19, relates to an inflexibility in utilizing spare bandwidth.

Regarding the Examiner's rejection of claims 1, 11 and 12, it is respectfully submitted that Howard teaches away from the invention. At column 2 lines 20 to 24, Howard specifies

what type of solution to the bandwidth allocation inflexibility problem is necessary: "What is needed, therefore, is a method and system that ensures bandwidth to different classes of traffic, limits the classes of traffic to a maximum bandwidth, and enables pre-selected classes to use more than their maximum bandwidth when there is bandwidth available." Howard teaches distributing bandwidth credits to queues up to maximum credit counter values, the excess being donated to a shared credit counter (see for example column 5 line 32, column 5 lines 61-67, column 6 lines 1-15, and starting at column 8, line 59), and in servicing a queue, a packet is transmitted if enough credits are available in a combination of the queue credit counter and the shared credit counter.

It can be readily appreciated that because, in accordance with Howard, the credit distribution is done once at the expiration of the round time, and because the scheduler goes through the queues in the list one-by-one, queues serviced first in Round Robin sequence benefit most from the shared bandwidth credits. Therefore Round Robin techniques are regarded as unfair particularly considering that the conveyed packets generally have bursty distribution in time which leads to network jitter. While Round Robin techniques are easy to understand and construct, Round Robin techniques are not preferred for applications with strict requirements on network jitter must be observed.

Turning to the present invention, the deleterious effects of network jitter are addressed directly in the Background of the Invention section at page 2 lines 15 to 27. The present application investigates the use of fair queuing techniques, however, citing from page 3 line 3: "[Known fair queuing] techniques provide a solution to the problem of bandwidth partitioning while being considered impractical to implement in hardware."

The present invention maintains a counter for each queue that tracks, at each instant in time, the difference between how much a queue has been served in the past, and how much that queue ought to have been served. A queue whose counter reads 0 has been served exactly enough. A queue is considered shortchanged if the queue has been underserved relative to its assigned bandwidth. To restore fairness, in deciding which queue to serve next, the presented solution teaches always choosing the most shortchanged queue that has a packet to transmit. Clause a. of claim 1, as amended, reads "selecting for servicing an output queue holding at least one PDU from the plurality of output queues, the selected output queue having an associated credit counter holding a lowest credit value ... whereby selecting for servicing the output queue having the lowest credit value, emulated weighted fair queuing is achieved in the long run with minimal computation."

It is respectfully submitted that, because Howard uses Round Robin techniques, Howard does not teach selecting a queue to transmit from, nor does Howard teach criteria for selecting a queue for service. Given the bursty nature of packet transmissions, Howard does not teach restoring queue service fairness.

The Examiner further states that "... the shared credit round robin queuing is inherently an improved efficient fair queuing of the weighted fair queuing ...", however the Examiner has failed to show support for such a statement in the prior art.

Claims 6 and 7 include the limitation of always choosing the most shortchanged queue that has a packet to transmit.

For all the foregoing reasons, there is no disclosure or teaching in Howard of all elements of applicant's presently claimed invention, and Howard is therefore not a proper grounds for

rejection of claims 1, 2, 6, 7, 11, and 12 under §102. Accordingly, reconsideration and withdrawal of the rejection under §102 are respectfully requested.

Allowance of claims 1-12 is courteously solicited.

Respectfully submitted,

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